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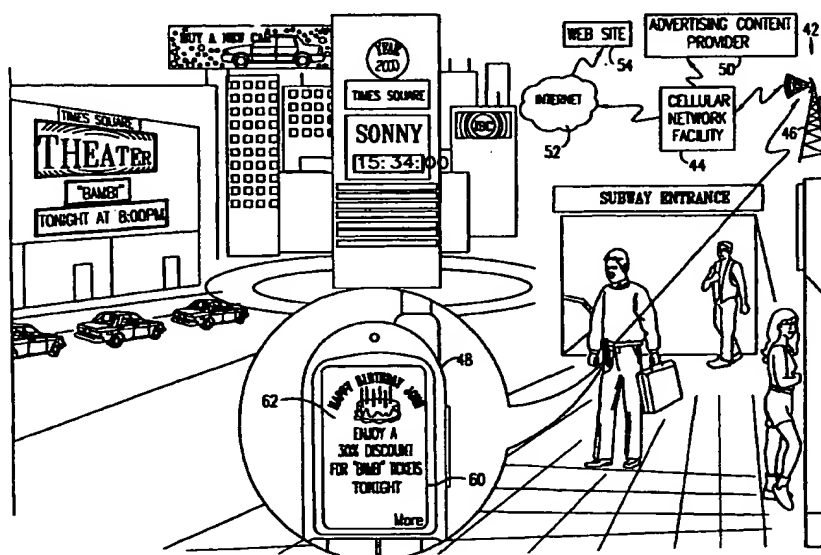
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(54) Title: **SYSTEM AND METHOD FOR WIRELESS ADVERTISING**



(57) Abstract: This invention discloses a wireless communication network (42) including at least one wireless carrier facility (44), a multiplicity of wireless communication units (48) in wireless communication with the at least one wireless carrier facility (44), at least some of the wireless communication units (48) having a user visible display (60), and an advertising facilitator for causing advertising content to appear automatically on the user visible display (60). An advertising method useful with a wireless communication network (42) is also disclosed.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM AND METHOD FOR WIRELESS ADVERTISING

FIELD OF THE INVENTION

The present invention relates to systems and methods for advertising on wireless media.

BACKGROUND OF THE INVENTION

Advertising on wireless media and cable television is extremely well established. Radio and television advertising is nearly as old as the media itself. In contrast, advertising on "wired" media, such as the Internet is relatively recent in origin. Such advertising, typically in the form of banners, e-mail messages and links to commercial web sites, is of substantial and increasing economic importance.

Merging of the "wired" and wireless media is now taking place and is exemplified in WAP technology, which enables cellular telephones to be employed for many Internet applications.

Display advertising on wireless devices such as cellular telephones and pagers is also known in the form of messages which require user action for retrieval.

The following U.S. Patents have been found on search and may be relevant to the present invention: 5,961,603; 5,948,061; 5,946,630; 5,946,629; 5,946,615; 5,940,767; 5,937,392; 5,933,811; 5,930,239; 5,920,826; 5,886,646; 5,884,184; 5,884,170; 5,852,775; 5,850,599; 5,835,861; 5,794,210; 5,740,549; 5,719,918; 5,673,305; 5,577,103; 5,524,136; 5,519,760; 5,515,098; 5,481,539; 5,457,680; 5,448,625; 5,388,148; 5,283,731; 5,235,633; 5,223,844; 4,850,007.

SUMMARY OF THE INVENTION

The present invention seeks to provide highly effective, and minimally intrusive advertising over wireless communication networks, such as cellular telephone networks and pager networks.

There is thus provided in accordance with a preferred embodiment of the present invention a wireless communication network including at least one wireless carrier facility, a multiplicity of wireless communication units in wireless communication with the at least one wireless carrier facility, at least some of the wireless communication units having a user visible display, and an advertising facilitator for causing advertising content to appear automatically on the user visible display.

Further in accordance with a preferred embodiment of the present invention the advertising facilitator automatically causes advertising content to appear on the display at times when the wireless communication unit is not employed by a user for other functions.

Still further in accordance with a preferred embodiment of the present invention the advertising facilitator automatically causes advertising content to appear on the display at times when a screen on the display has not changed for at least a predetermined amount of time. Preferably the advertising facilitator automatically causes advertising content to appear on the display at times following display of an entry screen on the display.

Additionally in accordance with a preferred embodiment of the present invention the advertising facilitator causes advertising content to fill substantially the entire display.

Moreover in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

Further in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.

Additionally in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to an overriding visual event to automatically cause immediate clearing of advertising content from the display.

Moreover in accordance with a preferred embodiment of the present invention, the wireless communication network also includes an advertising hit counter for counting advertising display hits. Preferably the advertising hit counter is responsive to user actuation on a wireless communication unit, which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.

Additionally or alternatively the advertising hit counter is responsive to purposeful, as opposed to non-purposeful, actuation of said wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.

Further in accordance with a preferred embodiment of the present invention the advertising hit counter is responsive to actuation of at least one key for counting an advertising display hit.

Additionally in accordance with a preferred embodiment of the present invention the advertising hit counter may also be responsive to at least a predetermined keystroke sequence for counting an advertising display hit.

Still further in accordance with a preferred embodiment of the present invention the advertising hit counter requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

Alternatively the wireless communication network may also include a user actuatable advertising interface enabling a user to interact with the advertising content.

Preferably the advertising interface includes e-commerce functionality.

Further in accordance with a preferred embodiment of the present invention the advertising interface includes coupon functionality.

Additionally or alternatively the advertising facilitator employs the current known approximate locations of active wireless communication units received from the facility for targeting recipients of advertising content by their current location.

Still further in accordance with a preferred embodiment of the present invention the advertising facilitator targets recipients of advertising content by the current time at their location.

Additionally the advertising facilitator may also target recipients of advertising content by a combination of their current time and location.

There is also provided in accordance with another preferred embodiment of the present invention an advertising method useful with a wireless communication network including at least one wireless carrier facility and a multiplicity of wireless communication units in wireless communication with the wireless carrier facility, at least some of said wireless communication units having a user visible display, the method includes the step of causing advertising content to appear automatically on the user visible display thereof.

Further in accordance with a preferred embodiment of the present invention the advertising content appears on the display at times when the wireless communication unit is not employed by the user for other functions. Preferably the advertising content automatically appears on the display at times when a screen on the display has not changed for at least a predetermined amount of time.

Still further in accordance with a preferred embodiment of the present invention the advertising content automatically appears on the display at times following display of an entry screen on the display.

Additionally in accordance with a preferred embodiment of the present invention the advertising content fills substantially the entire display.

Additionally in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

Moreover in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.

Still further in accordance with a preferred embodiment of the present invention the wireless communication unit is operative in response to an overriding

visual event to automatically cause immediate clearing of advertising content from the display.

Additionally in accordance with a preferred embodiment of the present invention the advertising method also includes the step of counting advertising display hits. Preferably the advertising hit counting is responsive to user actuation of the wireless communication unit which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.

Moreover in accordance with a preferred embodiment of the invention the advertising hit counting is responsive to purposeful, as opposed to non-purposeful, actuation of the wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.

Further in accordance with a preferred embodiment of the present invention advertising hit counting is responsive to actuation of at least one key for counting an advertising display hit.

Additionally in accordance with a preferred embodiment of the present invention the advertising hit counting is responsive to at least a predetermined keystroke sequence for counting an advertising display hit.

Further in accordance with a preferred embodiment of the present invention the advertising hit counting requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

Still further in accordance with a preferred embodiment of the present invention and also including a user actuable advertising interface enabling a user to interact with said advertising content. Preferably the advertising interface includes e-commerce functionality. Additionally or alternatively the advertising interface also includes coupon functionality.

Moreover in accordance with a preferred embodiment of the present invention the advertising method also employs knowing the current approximate locations of active wireless communication units received from the facility for targeting recipients of advertising content by their current location.

Additionally in accordance with a preferred embodiment of the present invention, the method targets recipients of advertising content by the current time at their location.

Still further in accordance with a preferred embodiment of the present invention, the method also targets recipients of advertising content according to a combination of their current time and location.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Figs. 1A, 1B, 1C & 1D are simplified pictorial illustrations of a wireless communication display advertising system constructed and operative in accordance with a preferred embodiment of the present invention operating in the context of a cellular communication network;

Fig. 2 is a simplified block diagram illustration of a wireless communication display advertising system, such as the system illustrated in Figs. 1A - 1D;

Fig. 3 is a simplified block diagram illustration of a wireless communication unit, forming part of the wireless communication display advertising system of Fig. 2;

Fig. 4 is a simplified block diagram illustration of a wireless carrier facility, forming part of the wireless communication display advertising system of Fig. 2;

Fig. 5 is a simplified block diagram illustration of a hub, forming part of the wireless communication display advertising system of Fig. 2;

Fig. 6 is a simplified block diagram illustration of a gateway, forming part of the wireless carrier facility of Fig. 4;

Fig. 7 is a simplified flow chart illustrating automatic ad display pop-up and clearing functionality in accordance with a preferred embodiment of the present invention;

Fig. 8 is a simplified flow chart illustrating the functionality of awaiting an ad display opportunity in accordance with a preferred embodiment of the present invention;

Figs. 9A and 9B are together a simplified flow chart illustrating the functionality of keystroke processing in accordance with a preferred embodiment of the present invention;

Fig. 10 is a simplified flow chart illustrating the functionality of determining and reporting the extent of user-ad interaction in accordance with a preferred embodiment of the present invention;

Fig. 11 is a simplified flow chart illustrating ad display verification in accordance with a preferred embodiment of the present invention;

Fig. 12 is a simplified flow chart illustrating coupon related activity in accordance with a preferred embodiment of the present invention;

Fig. 13 is a simplified flow chart illustrating ad push targeting functionality of a hub and a gateway in accordance with a preferred embodiment of the present invention;

Fig. 14 is a simplified flow chart illustrating ad push functionality of a gateway in a wireless carrier facility and of a wireless communication unit in accordance with a preferred embodiment of the present invention;

Fig. 15 is a simplified flow chart illustrating operation of the gateway and hub in response to receipt of a hit report and interaction details from a wireless communication unit; and

Fig. 16 is a simplified flow chart illustrating interactive operation of a hub and a wireless carrier facility in accordance with a preferred embodiment of the present invention for advertising billing.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Reference is now made to Figs. 1A - 1D, which are simplified pictorial illustrations of a wireless communication display advertising (WCDA) system constructed and operative in accordance with a preferred embodiment of the present invention operating in the context of a cellular communication network typically having WAP functionality. It is appreciated that the invention is not limited to any particular

type of wireless communication network, such as a cellular communication network, but rather is applicable to any suitable wireless communication network, such as, for example, a satellite communication network, a paging network, a wireless LAN network and a wireless WAN network.

As seen in Fig. 1A, the wireless communication display advertising system of the present invention preferably employs a wireless communication network, such as a cellular telephone communication network 42, which typically includes one or more cellular network facilities 44, a plurality of cell base stations 46 each communicating with a cellular network facility 44, and a multiplicity of wireless communication units (WCUs) such as mobile or portable telephone units 48 which can communicate with any one of base stations 46.

In accordance with a preferred embodiment of the present invention, advertising content providers 50 may communicate via one or more base stations 46 and facilities 44 with telephone units 48. Additionally or alternatively, the telephone units 48 may communicate via one or more base stations 46 and facilities 44 through the Internet 52 with web sites 54 of various types, such as, for example, conventional news, entertainment, advertising or e-commerce web sites.

As shown in Fig. 1A, at least some of the wireless telephone units 48 have user visible displays 60 incorporated therein. In accordance with one preferred embodiment of the present invention, the wireless telephone units are equipped with software providing WAP functionality, which enables them to surf the Internet wirelessly. It is to be appreciated, however, that the present invention does not require that the wireless telephone units have WAP functionality.

Fig. 1A shows an advertisement, hereinafter referred to at times as "ad", filling a screen of a display 60 of a telephone unit 48 carried by a user, when the telephone unit 48 is not in use. It is a particular feature of one embodiment of the present invention that the advertisement may change, for example, as a function of time and also as a function of the location of the telephone.

It is to be appreciated that although it is assumed that the advertising content of the advertisement will include at least a visually sensible component, such as text or graphics, for display on display 60, the advertising content may also have an audio component or may be wholly audio. Preferably, but not necessarily, the

advertising content may be in a multimedia format, such as video format, and have interactive functionality.

As shown in Fig. 1B, when the user carrying the telephone unit 48 reaches a given location, such as Times Square, in the illustration of Fig. 1B, an advertisement particularly targeted to that location may automatically appear, as shown at reference numeral 62. Furthermore, the content of the advertisement may be a function not only of the location of the telephone but also or alternatively of the time and date or a combination thereof. Additionally or alternatively, the content of the advertisement may be personalized to the individual user or to a class of users.

The advertisement indicated at reference numeral 62 is an example of advertising content which is location dependent, time dependent and personalized. Thus it is seen that the advertising content includes a birthday greeting which is personalized to the user, a location dependent reference to a Broadway show appearing at Times Square while the telephone unit 48 is located thereat. It is noted that the particular performance of the show being advertised is time and date dependent.

It is appreciated that the breadth of the present invention is not limited to use with advertisements having any or all of location, time and date dependencies or personalization, notwithstanding that such features are of significance.

Fig. 1C shows the user initiating usage of the telephone unit 48, typically by removing it from his pocket and holding it in his hand such that the display 60 is actually seen by him and he becomes aware of the advertising content thereon. At this stage, the user typically actuates one or more of the alphanumeric or function keys 64 on a keypad 66 located on telephone unit 48. In accordance with a preferred embodiment of the invention, actuation of at least selected ones of keys 64 is taken as a positive indication that the user has seen the advertisement on the display 60 and such actuation is therefore counted as a "hit".

Fig. 1D shows that immediately upon actuation of one of keys 64, the advertisement, such as that indicated by reference numeral 62 (Fig. 1C), is removed from display 60. This functionality is a particular feature of a preferred embodiment of the invention, inasmuch as it is important that the provision of advertisements not interfere unduly with the normal functioning of the telephone unit 48.

Preferably at this stage or at an appropriate time thereafter, feedback information regarding the user's interaction with the advertising content 62 on display 60, as seen in Fig. 1C, is provided via one or more base stations 46 and facilities 44 and optionally via the Internet 52 to an advertising content provider 50.

Such feedback information typically includes reports of hits and may also include detailed information relating to the timing and extent of user interaction with the advertising content on display 60 as well as e-commerce transaction data.

Reference is now made to Fig. 2, which is a simplified block diagram illustration of a wireless communication display advertising system, one example of which is shown in Figs. 1A - 1D. As seen in Fig. 2, the wireless communication display advertising system of the present invention preferably comprises a wireless communication display advertising (WCDA) hub 80 which communicates with one or more wireless carrier facilities 82, which typically have the functionality of facilities 44 (Figs. 1A - 1D). Each of the facilities 82 communicates typically via a plurality of base stations (not shown) such as base stations 46 (Figs. 1A - 1D) with a multiplicity of wireless communication units 84, such as cellular telephones, satellite telephones, pagers, wireless personal digital assistants (PDAs) and the like, which typically have the functionality of telephone units 48 (Figs. 1A - 1D).

In accordance with a preferred embodiment of the present invention the wireless carrier facility 82 communicates with the Internet. In this way, information may be communicated between WCUs 84 and a web site 86 on the Internet via a wireless carrier facility 82.

In accordance with a preferred embodiment of the present invention advertising content may be provided to the wireless carrier facility 82 and thence to WCUs 84 from an advertising content provider 88 via either the WCDA hub 80 or, typically in a WAP format, through the Internet via web site 86.

Feedback regarding user interaction with advertising content may be provided from the WCUs 84 via the wireless carrier facility 82 to the WCDA hub 80 or to a web site 86 and thence to an advertising content provider 88, as appropriate.

Reference is now made to Fig. 3, which is a simplified block diagram illustration of a wireless communication unit 84, forming part of the wireless communication display advertising system of Fig. 2. As seen in Fig. 3, WCU 84 may, in

one embodiment thereof, be identical in a hardware sense to a conventional cellular telephone such as one of Nokia Models 6160 & 7110 or a Motorola StarTac 3000 and preferably includes additional software which provides the functionality of the present invention.

The hardware elements of WCU 84 which are conventionally included in cellular telephones include a CPU 90, which controls the overall operation of the WCU 84 and interfaces with a memory 92, a display 94, which may have the functionality of display 60 (Figs. 1A - 1D), a keypad 96, which may have the functionality of keypad 66 (Figs. 1A - 1D) and signaling and communication circuitry 98 which communicates between the CPU 90 and a wireless carrier facility 82.

In accordance with a preferred embodiment of the present invention, the WCU 84 includes additional elements which are preferably embodied in software which may be downloaded to the WCU 84. These additional elements preferably include a WCDA client 100 which interfaces with CPU 90. A WAP micro browser 102 may also be provided. Various PDA applications 104 may be provided, such as for example calendaring, contact lists and reminders and may include functionalities having particular synergies with the advertising functionality of the WCU 84.

In operation, the WCDA client 100 preferably presents advertising content stored in memory 92 to the user, principally via display 94. Normally, the user may flip through the advertising content, which may include multiple cards, respond thereto or discard the content by manipulating the keypad 96 appropriately.

The WCDA client 100 periodically receives advertising content from a wireless carrier facility 82 and stores this content in memory 92. When the WCDA client identifies an appropriate time to display a given ad, it retrieves the ad from memory 92 and presents it on display 94 for viewing by a user.

The WCDA client 100 normally is responsive to a user input received via keypad 96 or any other suitable user input. This user input normally causes automatic clearing of the displayed ad on display 94, but is preferably also used as a confirmation that the ad was seen by the user, who would be presumed to have seen the ad prior to entering the user input.

The user input may consist of a user pressing any key on the keypad 96. Preferably, however, the user input, in order to be considered a confirmation that the ad

was seen by the user, so as to be used in counting ad hits, is selected to be a purposeful, as opposed to non-purposeful, actuation of one or more keys on keypad 96, thus enhancing integrity of a hit count produced thereby.

The user input may also constitute an interactive response to the ad, whereby the user may flip through cards of the ad and may effect transactions, effect links, clip coupons or otherwise respond to the ad.

A user may also use the keypad 96 for entering personal information and categories of interest relating to possible future advertisements. Such personal information and categories of interest may also be entered by users through other channels, such as via a website.

The WCDA client 100 preferably communicates user responses received by the keypad 96 to a wireless carrier facility 82. These responses typically include advertising hit counts, which indicate "user attention" as well as interactive responses.

Reference is now made to Fig. 4, which is a simplified block diagram illustration of a typical wireless carrier facility 82 forming part of the wireless communication display advertising system of Fig. 2. As seen in Fig. 4, wireless carrier facility 82 may, in one embodiment thereof, be identical in a hardware sense to a conventional cellular network facility and preferably includes additional software which provides the functionality of the present invention.

The relevant hardware and software elements of wireless carrier facility 82, which are conventionally included in cellular network facilities of this type, include one or more Short Message Service Centers (SMSC) 120 and Mobile Switching Centers (MSC) 122 which conventionally cooperate for transmitting SMS messages to wireless communication units, such as wireless communication units 84. It is expected that in the future there will be typically included in cellular network facilities one or more Gateway GPRS Support Nodes (GGSN) 124 and Server GPRS Support Nodes (SGSN) 126. These elements cooperate to provide general packet radio service (GPRS) which delivers data in a packet switched environment to wireless communication units such as units 84.

The illustrated embodiment of Fig. 4 shows a wireless application protocol (WAP) enabled wireless carrier facility 82 which includes a WAP gateway

128. It is appreciated that the invention is applicable as well to non-WAP enabled facilities, equipment and systems.

Conventional cellular network facilities, whether or not WAP-enabled, also preferably include at least one Operation and Maintenance Center (OMC) 130, which keeps track of the current status and location of all of the wireless communication units, such as units 84, which are in communication therewith. A billing system 132 also typically forms part of a conventional cellular network facility, provides billing functionality and typically also contains personal profile information relating to individual users.

In accordance with a preferred embodiment of the present invention, the wireless carrier facility 82 includes a wireless communication display advertising (WCDA) gateway 140, which is preferably embodied in software. WCDA gateway 140 preferably communicates with WCDA hub 80, SMSC 120, GGSN 124, WAP gateway 128, OMC 130 and billing system 132.

In accordance with a preferred embodiment of the present invention, the wireless carrier facility 82 provides multiple channels of communication for advertising content transmission to wireless communication units 84. In the illustrated embodiment, three such channels are provided, as described hereinbelow:

WCDA gateway 140 may communicate advertising content over SMS via SMSC 120 and MSC 122 to a wireless communication unit 84.

Additionally or alternatively, WCDA gateway 140 may communicate advertising content over GPRS via GGSN 124 and SGSN 126 to a wireless communication unit 84.

Additionally or alternatively, WCDA gateway 140 may communicate advertising content in WAP format via WAP gateway 128. The WAP gateway 128 may in turn communicate advertising content over SMS via SMSC 120 and MSC 122 to a wireless communication unit 84 or over GPRS via GGSN 124 and SGSN 126 to a wireless communication unit 84.

It is appreciated that feedback information may be supplied over the above-described communication channels in the opposite direction.

In accordance with a preferred embodiment of the present invention, the wireless carrier facility 82 provides multiple channels of communication of advertising

content information and feedback information with the WCDA gateway 140. In the illustrated embodiment, two such channels are provided, as described hereinbelow:

Advertising content may be supplied to WCDA gateway 140 directly from WCDA hub 80.

Alternatively or additionally, advertising content may be supplied to WCDA gateway 140 from a web site 86 through the Internet via WAP gateway 128.

Feedback information may be supplied over the above described communication channels in the opposite direction.

Additionally in accordance with a preferred embodiment of the invention, WCDA gateway 140 interacts with OMC 130 to receive WCU location and timing information therefrom and interacts with billing system 132 to receive personal profile information therefrom and to provide billing functionality.

Reference is now made to Fig. 5, which is a simplified block diagram illustration of a WCDA hub 80 forming part of the wireless communication display advertising system of Fig. 2. As seen in Fig. 5, the WCDA hub 80 comprises a hub distribution subsystem 150 which interfaces with a hub database server 152, associated with a hub database 154. The hub database server 152 interfaces with a hub billing subsystem 156. The hub distribution subsystem 150 and the hub billing subsystem 156 interface with a computer system of an advertising content provider 88 and with a wireless carrier facility 82, preferably over the Internet.

In operation, the hub distribution subsystem 150 receives advertising content and targeting instructions from the computer system of advertising content provider 88. Hub distribution subsystem 150 updates hub database server 152 and transmits the advertising content and targeting instructions to appropriate wireless carrier facilities 82. Hub distribution subsystem 150 also receives feedback information from WCUs 84 via facilities 82 and updates hub database server 152 and advertising content provider 88 accordingly.

Periodically hub billing subsystem 156, utilizes the feedback information received from the WCUs 84 via the database server 152 for generating billing information. This billing information is employed for billing advertising content providers 88, such as advertising brokers, preferably via their computer systems.

Outputs from billing subsystem 156 are preferably employed to update the hub database server 152 and the facilities 82 for providing appropriate credits.

Reference is now made to Fig. 6, which is a simplified block diagram illustration of a WCDA gateway 140 forming part of the wireless carrier facility 82 of Fig. 4. The WCDA gateway 140 typically comprises a gateway distribution subsystem 170 which interfaces with WCDA hub 80 and WAP gateway 128 as well as with SMSC 120, GGSN 124, OMC 130 and a gateway database server 172, associated with a gateway database 174. A gateway billing subsystem 176 interfaces with WCDA hub 80, with the wireless carrier facility billing system 132 and with gateway database server 172.

In operation, WCDA gateway 140 is responsible for interaction with WCUs 84 in order to provide suitably targeted advertising content thereto and to receive ad attention and user interaction feedback therefrom. The gateway distribution subsystem 170 receives advertising content and targeting instructions from WCDA hub 80 or from WAP gateway 128 and updates gateway database server 172 accordingly.

The gateway distribution subsystem 170 matches targeting instructions with personal profile, location and timing information relating to individual WCUs 84 and updates the gateway database server 172 accordingly. In doing so it checks with billing system 132 to obtain the relevant personal profile information and with OMC 130 to determine the location and the current time at that location for each relevant WCU 84 in order to provide targeting which preferably includes both location and time inputs. Once it has identified the relevant targeted WCUs 84 it ensures that the advertising content is supplied thereto via the SMSC 120 or the GGSN 124 and possibly via the WAP gateway 128.

Reference is now made to Fig. 7, which is a simplified flow chart illustrating automatic ad display pop-up and clearing functionality of a WCU 84 in a preferred embodiment of the system of Fig. 3. It is appreciated that in an alternative embodiment of the invention, some of this functionality could be carried out by other elements of the system of Fig. 2.

Inasmuch as it is desired to minimize or eliminate any interference between advertising and the normal non-advertising use of the WCU 84, such as for communications or PDA functions, in accordance with a preferred embodiment of the

present invention, ads appear only during "ad display opportunities". Ad display opportunities are preferably defined as times when the WCU 84 is not being used for other purposes.

Thus, as seen generally in Fig. 7, and in greater detail in Fig. 8, described hereinbelow, the WCU 84 awaits an ad display opportunity. Upon occurrence of an ad display opportunity, the WCU 84 causes the ad having the highest priority of ads stored in a queue to pop-up on the display 94, without requiring any user intervention whatsoever. This pop-up functionality may be readily distinguished from prior art ad messaging functionality, which requires user input for the ad to be seen.

In accordance with a preferred embodiment of the invention, the ad fills substantially the entire display 94 of the WCU 84 but does not necessarily block the display of various icons which may indicate incoming messages, missed calls, level of reception, battery status and the like.

Preferably, the ad, in the form that it originally popped-up on display 94, remains on the display until one of the following two types of events occurs: entry of a user keystroke and occurrence of an overriding visual event.

An overriding visual event may be any event which requires availability of the display 94 and overrides its use for advertising. Examples of overriding visual events may be incoming calls, reminders, alarms and certain other PDA functions.

The entry of a user keystroke may indicate that the user wishes to operate the WCU 84 and thus that it is appropriate that the ad be cleared from display 94. A specific user keystroke may, however, indicate that the user wishes to interact with the ad. As is described elsewhere herein, one or more given keystrokes are preferably also taken as an indication that the user has seen the ad displayed at the time of keystroke entry.

Suitable keystroke processing is preferably carried out in order to distinguish between various keystrokes and their implications, as described hereinbelow with reference to Figs. 9A & 9B. Immediately following keystroke processing and the functionality resulting therefrom, in the event of keystroke entry which is not related to user ad interaction, or following the overriding visual event, the display 94 is cleared of ads and returns to its non-advertising format.

The WCU 84 preferably also determines and reports the extent of the user interaction with the ad to the WCDA gateway 140 (Fig. 4), as described hereinbelow with reference to Fig. 10.

Reference is now made to Fig. 8, which illustrates the functionality of awaiting an ad display opportunity. As seen in Fig. 8, the user or any other entity governing operation of the system may determine the level of pop-up aggressiveness. When a relatively high level of aggressiveness has been selected, an ad display opportunity is deemed to take place at any time when there is no substantial functional change in the display 94 for at least a predetermined amount of time. According to a relatively low level of aggressiveness, an ad display opportunity is deemed to take place only when, following display of the main entry screen of WCU 84, no keystroke or overriding visual event occurs within a predetermined amount of time.

Reference is now made to Figs. 9A and 9B, which are together a simplified flow chart illustrating the functionality of keystroke processing relating to user interaction with an ad, forming part of the functionality of Fig. 7. It is appreciated that various types of WCUs 84 have different key arrangements, such as programmable function keys, multiple multi-function or dedicated function keys. The functionality of Figs. 9A & 9B is applicable to any suitable keypad architecture.

Based on which key or keys are actuated by the user, a determination is made whether the user wishes to flip through the various cards of the ad. If so, such a card flipping functionality is effected. Following such card flipping, information relating to the user's interaction with the ad is saved and a further keystroke is awaited.

A determination may also be made based on which key or keys are actuated by the user of whether a link in the ad is requested by the user. A link may be, for example, a connection to a vendor's web site or a telephone call directly to the vendor. If desired by the user, such a link is activated. Following such activation, information relating to the user's interaction with the ad is saved and a further keystroke is awaited.

A determination may additionally be made based on which key or keys are actuated by the user of whether a transaction based on the ad is requested by the user. A transaction may be, for example, buying a product or service over the Internet via a vendor's web site or via fax or a telephone call directly to the vendor. If desired by

the user, such a transaction may be carried out by suitable conventional transaction software. Following such transaction, information relating to the user's interaction with the ad is saved and a further keystroke is awaited.

A determination may also be made based on which key or keys are actuated by the user of whether the user wishes to save the ad. If desired by the user, the ad is saved, normally outside the queue of ads to be displayed. Following such activity, information relating to the user's interaction with the ad is saved and a further keystroke is awaited.

A determination may additionally be made based on which key or keys are actuated by the user of whether the user wishes to "clip" a coupon in the ad. If desired by the user, the desired coupon is clipped. Following such activity, information relating to the user's interaction with the ad is saved and a further keystroke is awaited.

A determination may also be made based on which key or keys are actuated by the user of whether the user wishes to clear the ad from the display 94. If desired by the user, the display is cleared of the ad. Prior to clearing the ad, information relating to the user's interaction with the ad is saved.

A determination may also be made based on which key or keys are actuated by the user of whether the user wishes not to see the ad again. If so desired by the user, the display is cleared of the ad. Prior to clearing the ad, information relating to the user's interaction with the ad, including his wish not to see the ad again, is saved.

A determination may also be made based on which key or keys are actuated by the user of whether the user wishes to view the next ad in the queue. If desired by the user, the next queued ad will be displayed. Prior to the display of the next ad, information relating to the user's interaction with the current ad is saved.

Reference is now made to Fig. 10, which is a simplified flow chart illustrating the functionality of determining and reporting hits and the extent of user-ad interaction. The functionality of Fig. 10 is directed to determine whether a hit, indicating user attention to the ad, has occurred and if so, to report information indicating to what extent the user interacted with the ad.

As illustrated in Fig. 10, a determination is made whether at the time of ad display a user keystroke, as opposed to a visual event, caused the ad display to be

cleared. If the ad display was cleared in response to an overriding visual event, which, it is assumed means that the user did not see the ad, no hit is recorded.

Determination that upon entry of a user keystroke, a given ad was in fact displayed is preferably made using verification functionality, such as that described hereinbelow with reference to Fig. 11. This verification functionality preferably takes place in the short time immediately following a keystroke entry and prior to clearing of the ad from the display 94 (Fig. 7).

Depending on a pre-programmed level of hit counting assertiveness, a keystroke entry during ad display is either always counted as a hit or is only counted as a hit under certain circumstances. If a relatively high level of hit counting assertiveness is effective, a keystroke entry during ad display is counted as a hit, inasmuch as it is assumed that the user viewed the screen while effecting the keystroke. If, however, a relatively low level of hit counting assertiveness is effective, keystroke entry is monitored in order to determine to a higher level of certainty whether, in fact, the user saw the ad.

In the illustrated embodiment, this monitoring can continue for a predetermined time following a last keystroke in a series or until an overriding visual event occurs. The identity of the keys actuated may constitute a criterion for deciding whether a hit has occurred. Typically, if a meaningful function is carried out, it is assumed that the user viewed the ad upon effecting the keystroke and thus the keystroke which occurred during ad display causes a hit to be counted.

Once a hit is determined to have taken place, it is reported along with information regarding user interaction with the ad, such as flipping therethrough, link activation or transactions, to the WCDA gateway 140 (Fig. 4). Additionally, the ad is cleared from the queue.

Reference is now made to Fig. 11, which is a simplified flow chart which illustrates ad display verification functionality which preferably takes place during the short time between keystroke entry and ad clearing. In the illustrated embodiment, a display buffer (not shown) associated with the display 94 (Fig. 3) is sampled during the short time between keystroke entry and ad clearing to indicate the current content being displayed. This current content is compared with the ad content which is scheduled for current display, as indicated by the contents of memory 92 (Fig. 3). If the current

content is reasonably identical to the scheduled ad display content, a verification indication is provided, confirming that at the time of keystroke entry, the ad content was actually visible to the user on the display 94.

Reference is now made to Fig. 12, which is a simplified flow chart which illustrates coupon activity functionality. As seen in Fig. 12, the user may browse saved coupons in a conventional manner by employing next and previous functions, effected by suitable keystrokes. The user may also select a coupon for display. A redeem functionality may be effected either via the WCU 84 (Fig. 2) by a suitable keystroke and additionally or alternatively by a vendor using his computer system which may tie in with the WCU 84.

Reference is now made to Fig. 13, which is a simplified flow chart illustrating ad push targeting functionality of a WCDA hub 80 (Fig. 2) and a WCDA gateway 140 (Fig. 4) in a wireless carrier facility 82 (Fig. 2) in accordance with a preferred embodiment of the present invention. The functionality of Fig. 13 deals with matching targeting instructions for a given ad to the available WCUs 84 by selecting suitable WCDA gateways 140.

The WCUs 84 are typically classified in accordance with demographic data stored in billing system 132 (Fig. 4) and WCDA gateway database 74 as well as in accordance with location and time indicated by OMC 130 (Fig. 4). The matching is preferably carried out partially at the WCDA hub 80 wherein suitable WCDA gateways 140 are selected as described hereinbelow with specific reference to Fig. 13 and partially at the WCDA gateways 140 where specific WCUs 84 are selected, sometimes at specific locations thereof and times, as described hereinbelow with specific reference to Fig. 14.

Based on the match, preferably in a real time manner, ads are pushed to specified WCUs and priorities assigned thereto. Preferably feedback data received from the WCUs 84 is also employed in real time to ensure that the actual audience matches that requested by the advertiser. Should the feedback data indicate otherwise, it is possible that ads may be immediately pushed to additional WCUs 84 or that priorities be upgraded on a real time basis.

As seen in Fig. 13, advertising content accompanied by targeting instructions is typically received by a WCDA hub 80 from an advertising content

provider 88 (Fig. 2). The WCDA hub 80 performs a first round matching function by selecting suitable facilities 82, each having at least one WCDA gateway 140 which serves WCUs 84 matching the profile indicated by the targeting instructions.

The WCDA hub 80 pushes the advertising content accompanied by the targeting instructions to the individual WCDA gateway or gateways 140 as appropriate. Each gateway 140 preferably carries out second round matching of individual ads with individual WCUs 84, which may be based, inter alia on the non-time and location dependent characteristics of the WCUs thereof. As will be described hereinbelow, with reference to Fig. 14, the time and location dependent characteristics of the WCUs come into play when a decision is made to push specific ads to specific WCUs.

It is seen that a WCDA gateway 140 may also receive advertising content with targeting instructions from a web site 86 (Fig. 2). Normally the targeting instructions accompanying the advertising content received from a web site 86 are WCU specific and thus do not require first round matching functionality provided by WCDA hub 80 or the subsequent second round matching provided by the WCDA gateway 140, which is described hereinabove.

The WCDA gateway 140 is operative to assign individual ads to a pending list for each individual WCU to await specific push functionality which will now be described with reference to Fig. 14.

Reference is now made to Fig. 14, which is a simplified flow chart illustrating ad push operation of a WCDA gateway 140 (Fig. 4) in a wireless carrier facility 82 (Fig. 2) and a WCDA client 100 (Fig. 3) in a wireless communication unit 84 (Fig. 2) in accordance with a preferred embodiment of the present invention.

The WCDA gateway 140 normally pushes advertising content to WCDA clients 100 in WCUs 84. Normally the memory 92 of each WCU 84 stores a small number of ads, each of which may contain a number of cards which may be interactively accessed by a user. The WCDA gateway 140 of the wireless carrier facility 82 preferably not only determines which ads are pushed to which WCUs 84 at what times but also prioritizes the ads that are stored in the memory 92 of each WCU 84.

As seen in Fig. 14, the WCDA gateway 140 pushes an ad to a specific WCU 84 under one of two sets of circumstances:

When memory 92 of the WCU has room for another ad and another ad is in a pending list for that WCU.

When a time and/or location sensitive ad is intended for a given WCU whose current time and/or location matches the time and/or location instructions appertaining thereto. In this latter case, the time and/or location sensitive ad is given top priority which overrides the priority of other ads in memory 92.

It is appreciated that the WCDA gateway 140 may also vary the priority of ads stored in memory 92.

The WCDA client 100 cooperates with the WCDA gateway 140 and causes ads pushed thereto to be prioritized and displayed based on instructions received from the WCDA gateway 140. The WCDA client 100 also provides updates to the WCDA gateway 140 on the status of ads stored in memory 92 and the display and user interaction with ads displayed on display 94, as is described hereinbelow with reference to Fig. 15.

Reference is now made to Fig. 15, which is a simplified flow chart illustrating operation of the WCDA gateway and WCDA hub in response to receipt of an ad interaction report from a WCU. As seen in Fig. 15, the WCDA gateway 140 (Fig. 4) receives a hit report and interaction details from a WCDA client 100 (Fig. 3) in a WCU 84 (Fig. 2). In the WCDA gateway 140 shown in Fig. 6, the gateway distribution subsystem 170 updates the gateway database server 172 with ad interaction report received from the WCU 84.

Periodically, the WCDA gateway 140 provides the ad interaction reports to WCDA hub 80 (Fig. 2). As shown in Fig. 5, in the WCDA hub 80, the hub distribution subsystem 150 receives the ad interaction report from WCDA gateway 140 and updates the hub database server 152 accordingly. The hub distribution subsystem 150 also periodically provides a summary of ad interaction reports for each given ad to the advertising content provider 88.

Additionally or alternatively, as appropriate the WCDA gateway 140 transmits the ad interaction reports to web site 86 (Fig. 2).

Reference is now made to Fig. 16, which is a simplified flow chart illustrating interactive operation of a WCDA hub 80 and a wireless carrier facility 82 in accordance with a preferred embodiment of the present invention for advertising billing.

In the WCDA gateway 140 of wireless carrier facility 82, gateway billing subsystem 176 (Fig. 6) interacts with a hub billing subsystem 156 (Fig. 5) in WCDA hub 80.

As seen in Fig. 16, periodically the hub billing subsystem 156 (Fig. 5) requests billing information from gateway billing subsystems 176 of gateways 140. Once the requested billing information is received by the hub billing subsystem 156, the hub billing subsystem 156 prepares and sends invoices to advertising content providers 88. Additionally in accordance with a preferred embodiment of the invention, the hub billing subsystem 156 of WCDA hub 80 issues credits to the appropriate accounting departments of the wireless carriers whose facilities 82 participate in the ad display functionality described hereinabove. Normally these credits represent a share of the ad revenues.

Each WCDA gateway 140 preferably also provides credits to individual users who receive ads. These credits may be designed to compensate the users for wireless carrier charges which may have been incurred as the result of ad transmission to their WCUs and possibly also to provide the user's receiving the ads with a share of relevant ad revenue. These credits are normally transmitted by the gateway billing subsystem 176 to the appropriate billing system 132 (Fig. 4) at the wireless carrier facility 82 of the wireless carrier .

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the present invention includes both combinations and subcombinations of the various features described and shown as well as modifications and variations thereof which would occur to a skilled person of the art upon reading the foregoing description and which are not in the prior art.

C L A I M S

1. A wireless communication network comprising:
at least one wireless carrier facility;
a multiplicity of wireless communication units in wireless communication with said at least one wireless carrier facility, at least some of said wireless communication units having a user visible display; and
an advertising facilitator for causing advertising content to appear automatically on the user visible display.
2. A wireless communication network according to claim 1 and wherein said advertising facilitator automatically causes advertising content to appear on the display at times when the wireless communication unit is not employed by a user for other functions.
3. A wireless communication network according to claim 2 and wherein said advertising facilitator automatically causes advertising content to appear on the display at times when a screen on said display has not changed for at least a predetermined amount of time.
4. A wireless communication network according to claim 2 and wherein said advertising facilitator automatically causes advertising content to appear on the display at times following display of an entry screen on said display.
5. A wireless communication network according to claim 1 and wherein said advertising facilitator causes advertising content to fill substantially the entire display.
6. A wireless communication network according to claim 1 and wherein said wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

7. A wireless communication network according to claim 1 and wherein said wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.
8. A wireless communication network according to claim 1 and wherein said wireless communication unit is operative in response to an overriding visual event to automatically cause immediate clearing of advertising content from the display.
9. A wireless communication network according to claim 1 and also comprising an advertising hit counter for counting advertising display hits.
10. A wireless communication network according to claim 9 and wherein said advertising hit counter is responsive to user actuation on a wireless communication unit, which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.
11. A wireless communication network according to claim 9 and wherein said advertising hit counter is responsive to purposeful, as opposed to non-purposeful, actuation of said wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.
12. A wireless communication network according to claim 9 and wherein said advertising hit counter is responsive to actuation of at least one key for counting an advertising display hit.
13. A wireless communication network according to claim 9 and wherein said advertising hit counter is responsive to at least a predetermined keystroke sequence for counting an advertising display hit.
14. A wireless communication network according to claim 9 and wherein said advertising hit counter requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

15. A wireless communication network according to claim 1 and also comprising a user actuatable advertising interface enabling a user to interact with said advertising content.
16. A wireless communication network according to claim 15 and wherein said advertising interface includes e-commerce functionality.
17. A wireless communication network according to claim 15 and wherein said advertising interface includes coupon functionality.
18. A wireless communication network according to claim 1 and wherein said advertising facilitator employs the current known approximate locations of active wireless communication units received from said facility for targeting recipients of advertising content by their current location.
19. A wireless communication network according to claim 1 and wherein said advertising facilitator targets recipients of advertising content by the current time at their location.
20. A wireless communication network according to claim 1 and wherein said advertising facilitator targets recipients of advertising content by a combination of their current time and location.
21. A wireless communication network according to claim 2 and wherein said advertising facilitator causes advertising content to fill substantially the entire display.
22. A wireless communication network according to claim 2 and wherein said wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

23. A wireless communication network according to claim 2 and wherein said wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.

24. A wireless communication network according to claim 2 and wherein said wireless communication unit is operative in response to an overriding visual event to automatically cause immediate clearing of advertising content from the display.

25. A wireless communication network according to claim 2 and also comprising an advertising hit counter for counting advertising display hits.

26. A wireless communication network according to claim 25 and wherein said advertising hit counter is responsive to user actuation on a wireless communication unit, which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.

27. A wireless communication network according to claim 25 and wherein said advertising hit counter is responsive to purposeful, as opposed to non-purposeful, actuation of the wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.

28. A wireless communication network according to claim 25 and wherein said advertising hit counter is responsive to actuation of at least one key for counting an advertising display hit.

29. A wireless communication network according to claim 25 and wherein said advertising hit counter is responsive to at least a predetermined keystroke sequence for counting an advertising display hit.

30. A wireless communication network according to claim 25 and wherein said advertising hit counter requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

31. A wireless communication network according to claim 2 and also comprising a user actuable advertising interface enabling a user to interact with said advertising content.

32. A wireless communication network according to claim 31 and wherein said advertising interface includes e-commerce functionality.

33. A wireless communication network according to claim 31 and wherein said advertising interface includes coupon functionality.

34. A wireless communication network according to claim 2 and wherein said advertising facilitator employs the current known approximate locations of active wireless communication units received from said facility for targeting recipients of advertising content by their current location.

35. A wireless communication network according to claim 2 and wherein said advertising facilitator targets recipients of advertising content by the current time at their location.

36. A wireless communication network according to claim 2 and wherein said advertising facilitator targets recipients of advertising content by a combination of their current time and location.

37. An advertising method useful with a wireless communication network including at least one wireless carrier facility and a multiplicity of wireless communication units in wireless communication with the wireless carrier facility, at least some of said wireless communication units having a user visible display, the method comprising:

causing advertising content to appear automatically on the user visible display thereof.

38. An advertising method according to claim 37 and wherein said advertising content appears on the display at times when the wireless communication unit is not employed by the user for other functions.

39. An advertising method according to claim 38 and wherein said advertising content automatically appears on the display at times when a screen on said display has not changed for at least a predetermined amount of time.

40. An advertising method according to claim 38 and wherein said advertising content automatically appears on the display at times following display of an entry screen on said display.

41. An advertising method according to claim 37 and wherein said advertising content fills substantially the entire display.

42. An advertising method according to claim 37 and wherein said wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

43. An advertising method according to claim 37 and wherein said wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.

44. An advertising method according to claim 37 and wherein said wireless communication unit is operative in response to an overriding visual event to automatically cause immediate clearing of advertising content from the display.

45. An advertising method according to claim 37 and also comprising counting advertising display hits.

46. An advertising method according to claim 45 and wherein said advertising hit counting is responsive to user actuation of the wireless communication unit which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.

47. An advertising method according to claim 45 and wherein said advertising hit counting is responsive to purposeful, as opposed to non-purposeful, actuation of the wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.

48. An advertising method according to claim 45 and wherein said advertising hit counting is responsive to actuation of at least one key for counting an advertising display hit.

49. An advertising method according to claim 45 and wherein said advertising hit counting is responsive to at least a predetermined keystroke sequence for counting an advertising display hit.

50. An advertising method according to claim 45 and wherein said advertising hit counting requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

51. An advertising method according to claim 37 and also comprising a user actuable advertising interface enabling a user to interact with said advertising content.

52. An advertising method according to claim 51 and wherein said advertising interface includes e-commerce functionality.

53. An advertising method according to claim 51 and wherein said advertising interface includes coupon functionality.

54. An advertising method according to claim 37 and also employing the current known approximate locations of active wireless communication units received from said facility for targeting recipients of advertising content by their current location.

55. An advertising method according to claim 37 and also targeting recipients of advertising content by the current time at their location.

56. An advertising method according to claim 37 and also targeting recipients of advertising content according to a combination of their current time and location.

57. An advertising method according to claim 38 and wherein said advertising content fills substantially the entire display.

58. An advertising method according to claim 38 and wherein said wireless communication unit is operative in response to user actuation, indicating that the user intends to operate a function of the wireless communication unit, to automatically cause immediate clearing of advertising content from the display.

59. An advertising method according to claim 38 and wherein said wireless communication unit is operative in response to receipt of an incoming call to automatically cause immediate clearing of advertising content from the display.

60. An advertising method according to claim 38 and wherein said wireless communication unit is operative in response to an overriding visual event to automatically cause immediate clearing of advertising content from the display.

61. An advertising method according to claim 38 and also comprising counting advertising display hits.

62. An advertising method according to claim 61 and wherein said advertising hit counting is responsive to user actuation of the wireless communication unit which normally indicates that the user has seen advertising content appearing on the display just prior to such actuation.

63. An advertising method according to claim 61 and wherein said advertising hit counting is responsive to purposeful, as opposed to non-purposeful, actuation of the wireless communication unit for counting a hit, thus enhancing integrity of a hit count produced thereby.

64. An advertising method according to claim 61 and wherein said advertising hit counting is responsive to actuation of at least one key for counting an advertising display hit.

65. An advertising method according to claim 61 and wherein said advertising hit counting is responsive to at least a predetermined keystroke sequence for counting an advertising display hit.

66. An advertising method according to claim 61 and wherein said advertising hit counting requires verification that an ad was actually displayed at the time of actuation of at least one key for counting an advertising display hit.

67. An advertising method according to claim 38 and also comprising a user actuatable advertising interface enabling a user to interact with said advertising content.

68. An advertising method according to claim 67 and wherein said advertising interface includes e-commerce functionality.

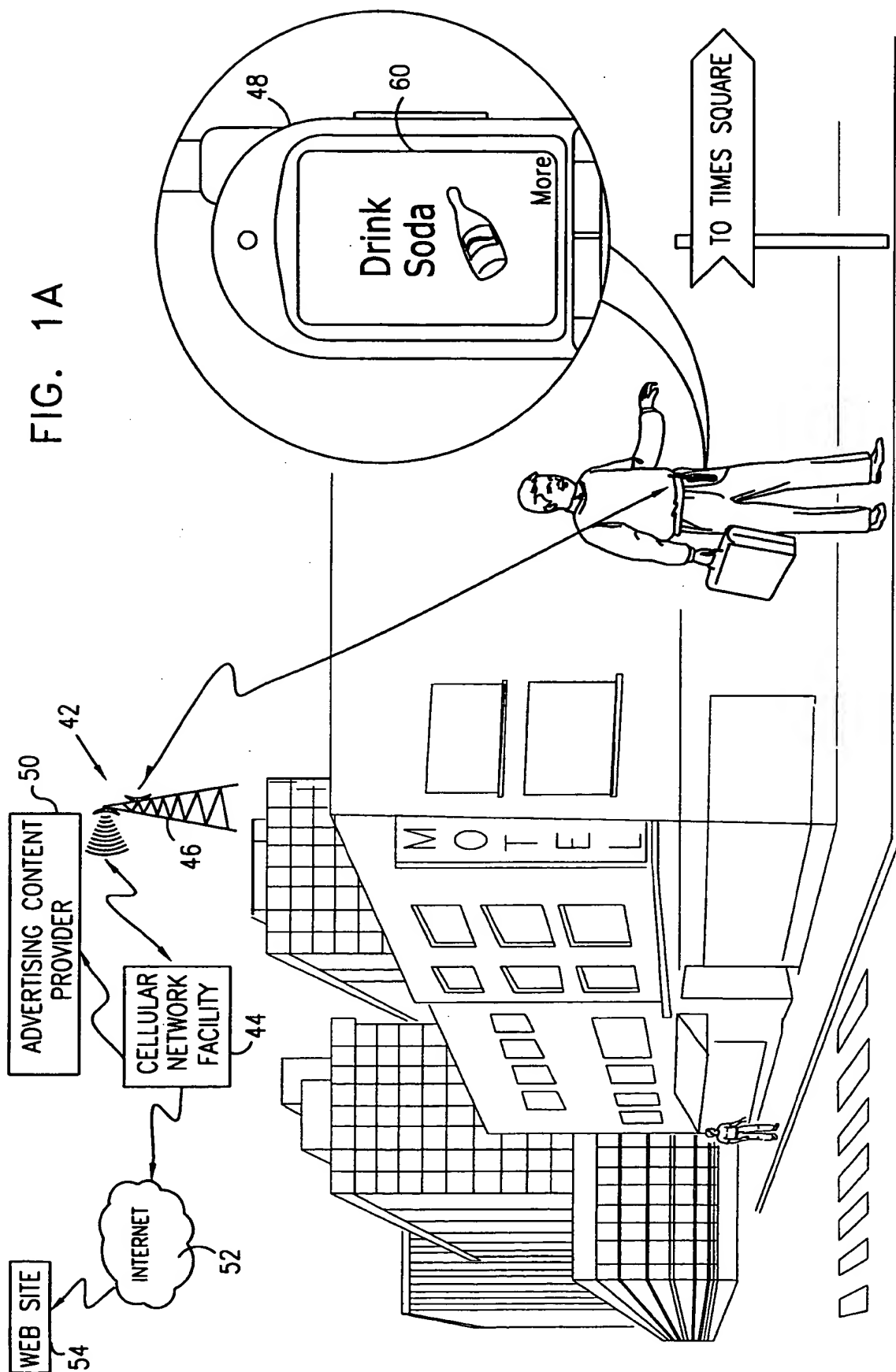
69. An advertising method according to claim 67 and wherein said advertising interface includes coupon functionality.

70. An advertising method according to claim 38 and also employing the current known approximate locations of active wireless communication units received from said facility for targeting recipients of advertising content by their current location.

71. An advertising method according to claim 38 and also targeting recipients of advertising content by the current time at their location.

72. An advertising method according to claim 38 and also targeting recipients of advertising content according to a combination of their current time and location.

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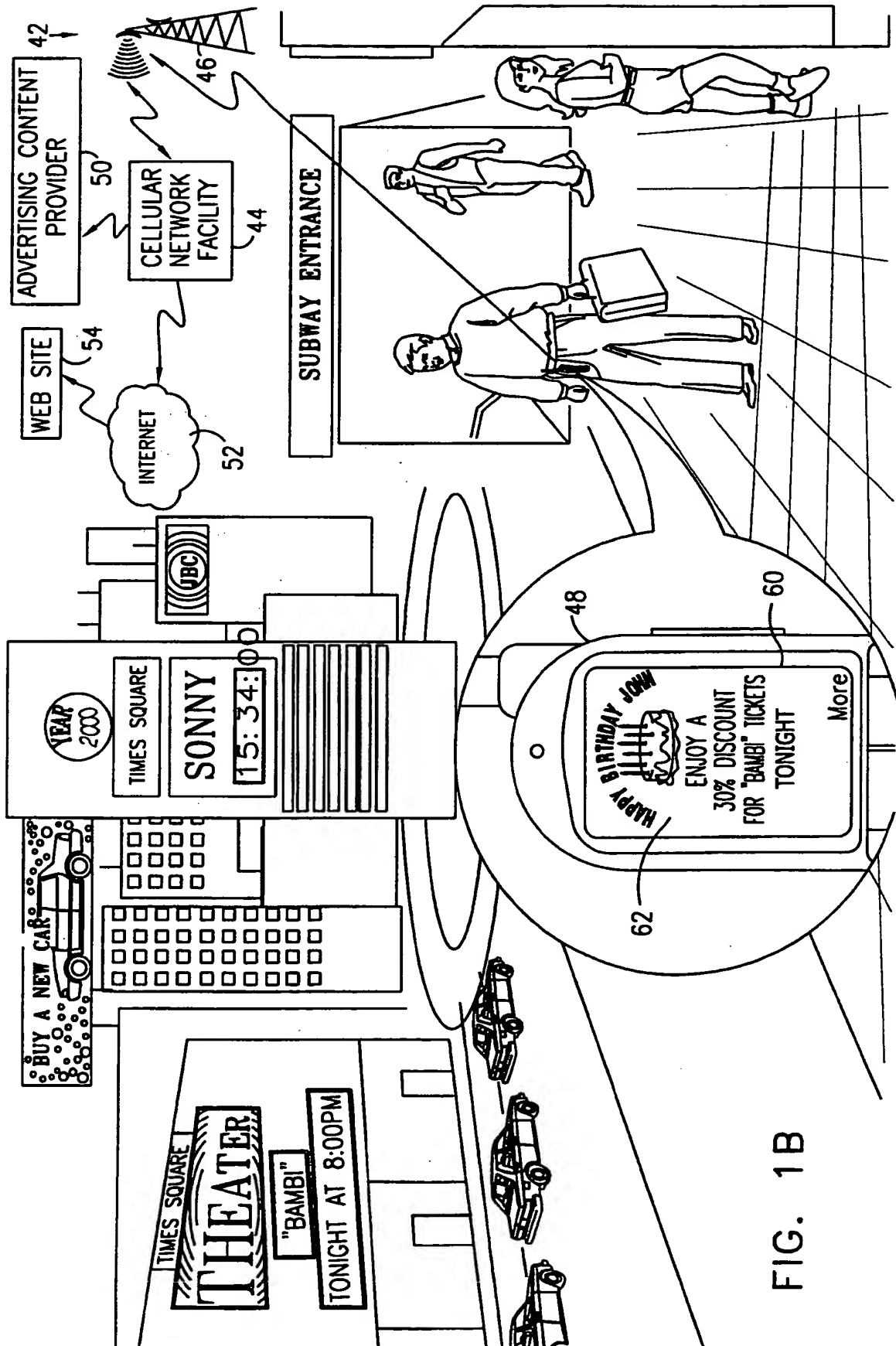
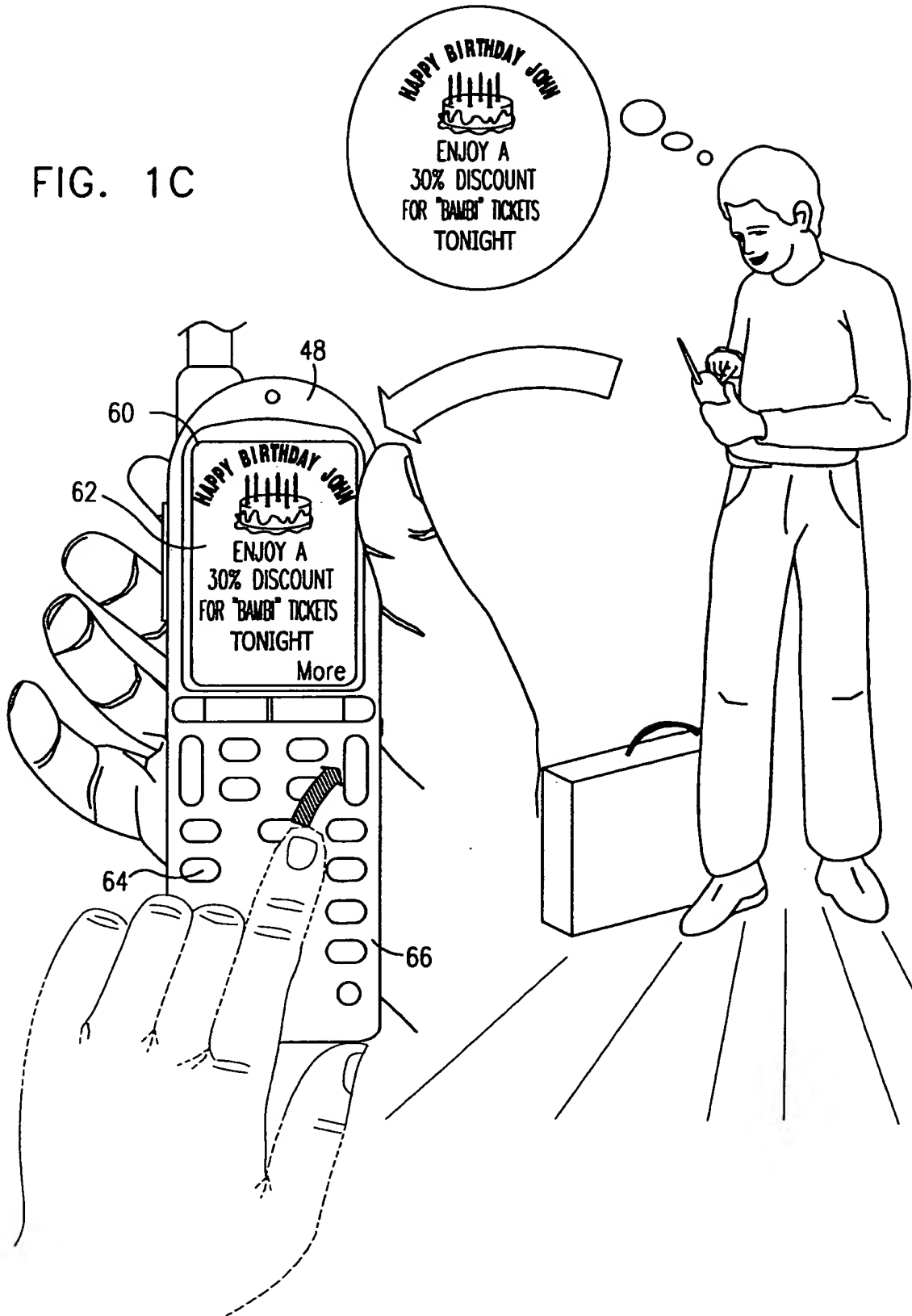


FIG. 1B

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FIG. 1C



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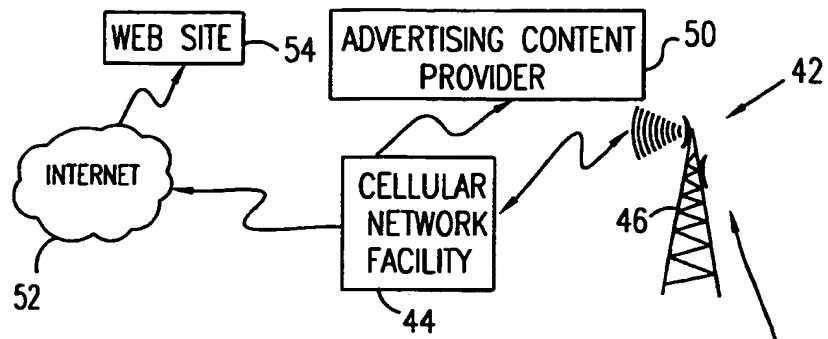
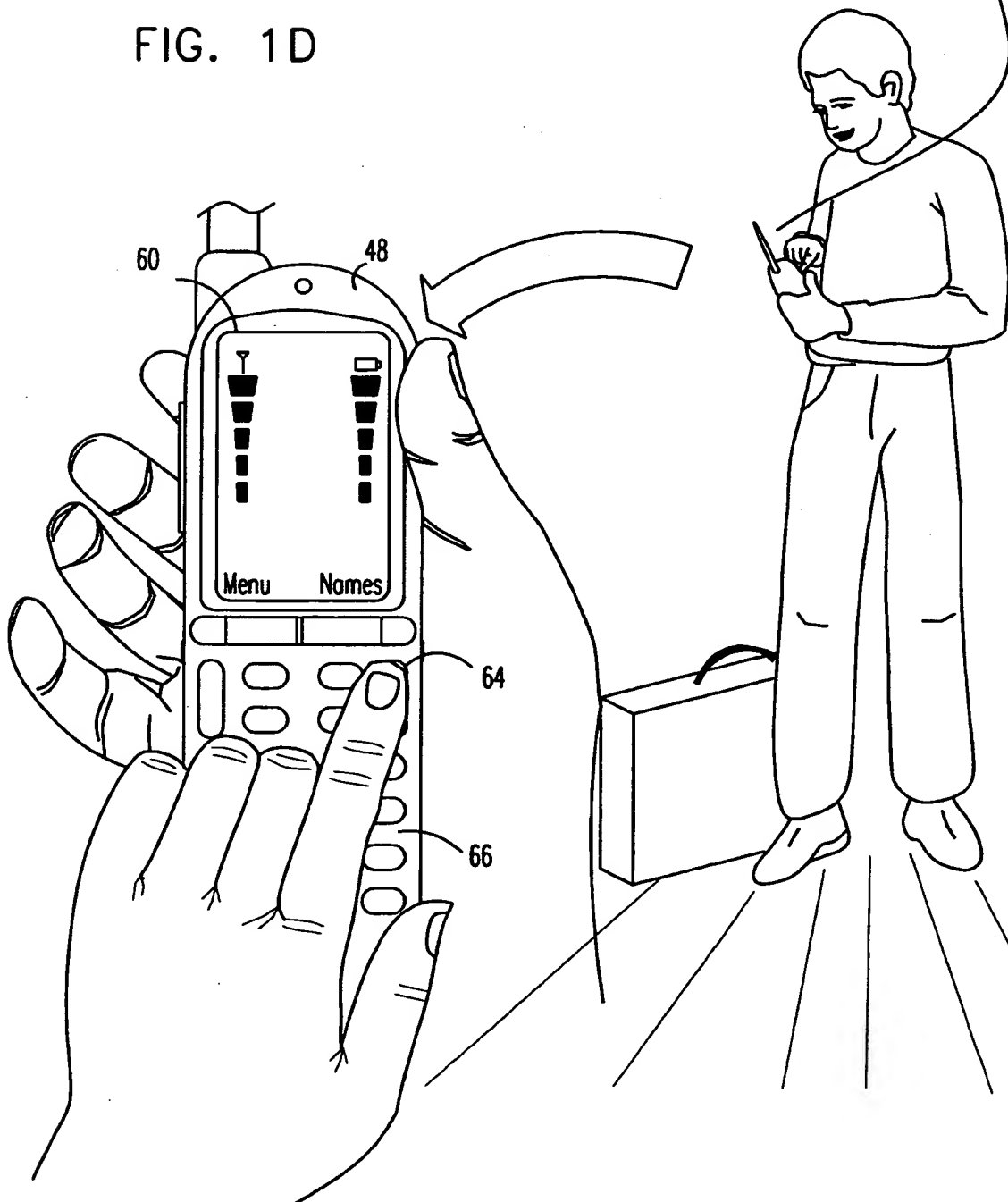


FIG. 1D



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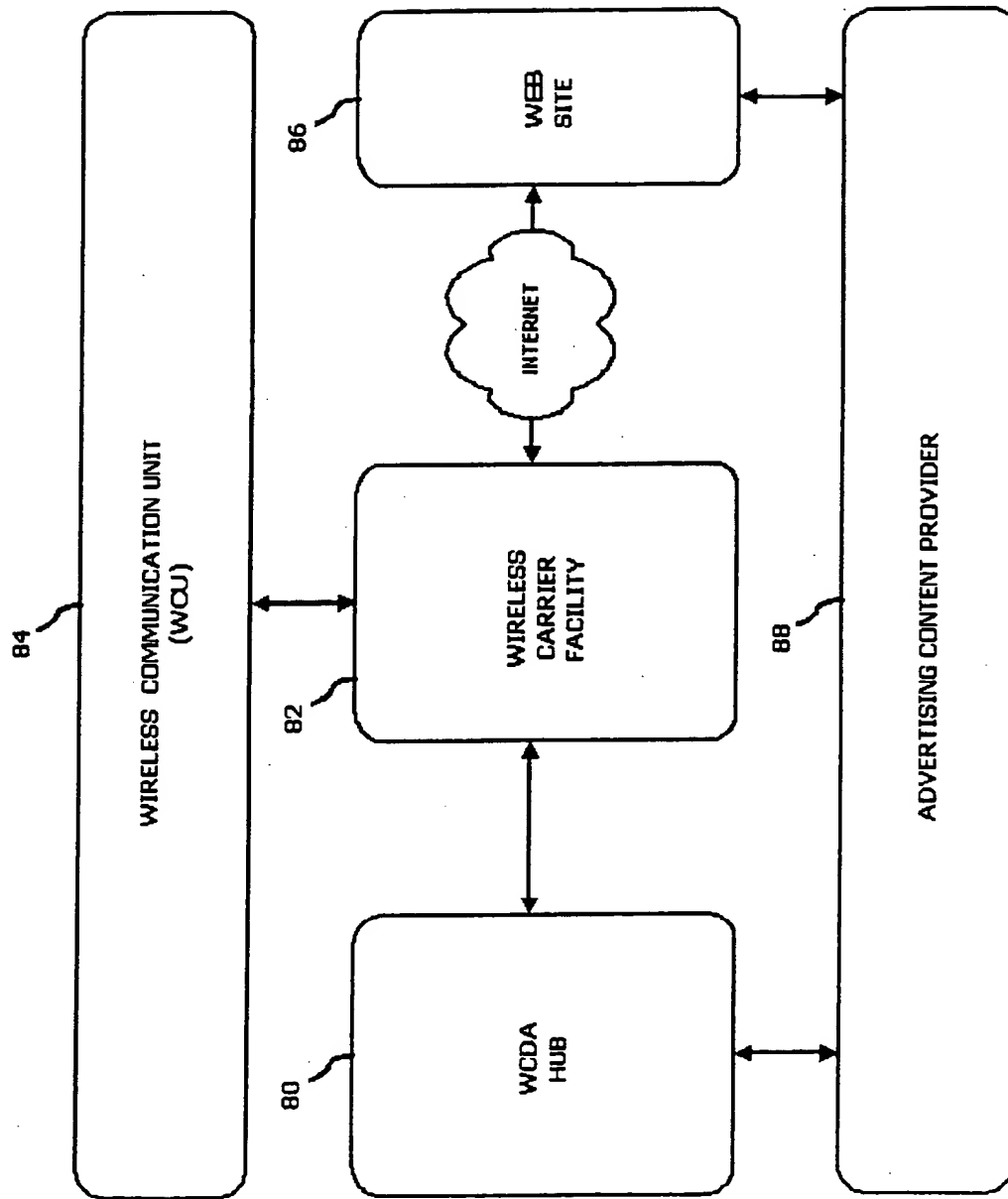


FIG. 2

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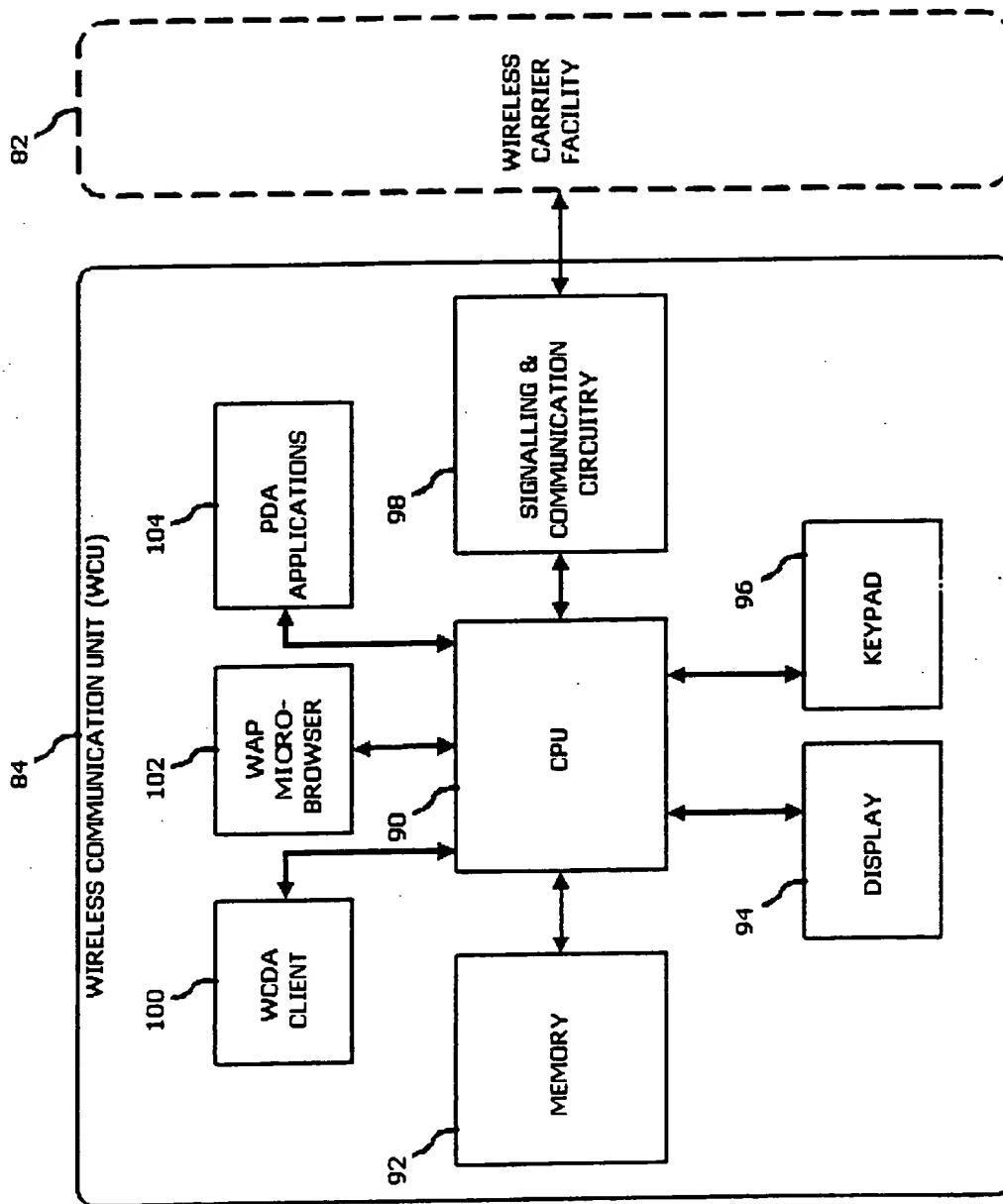


FIG. 3

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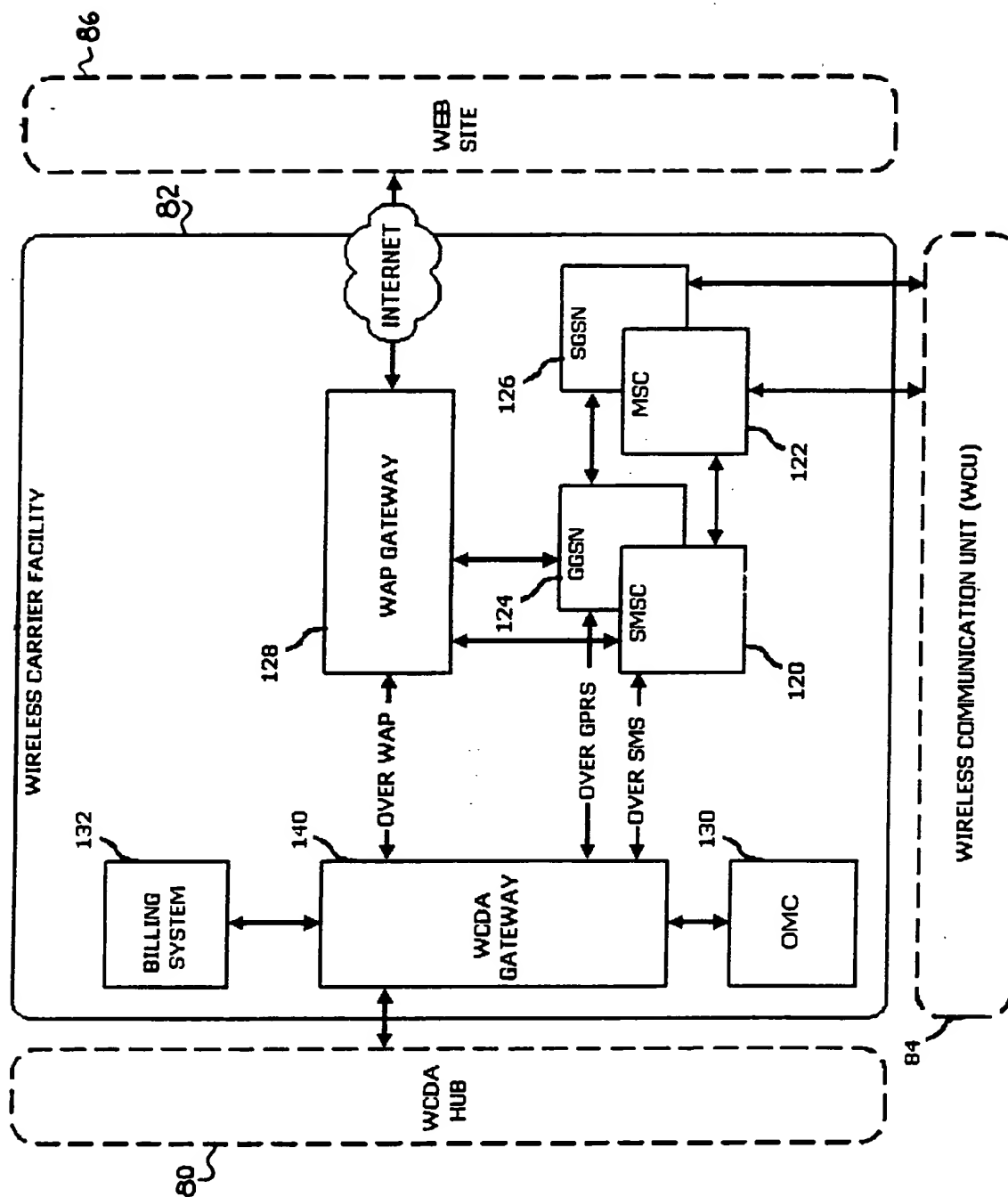


FIG. 4

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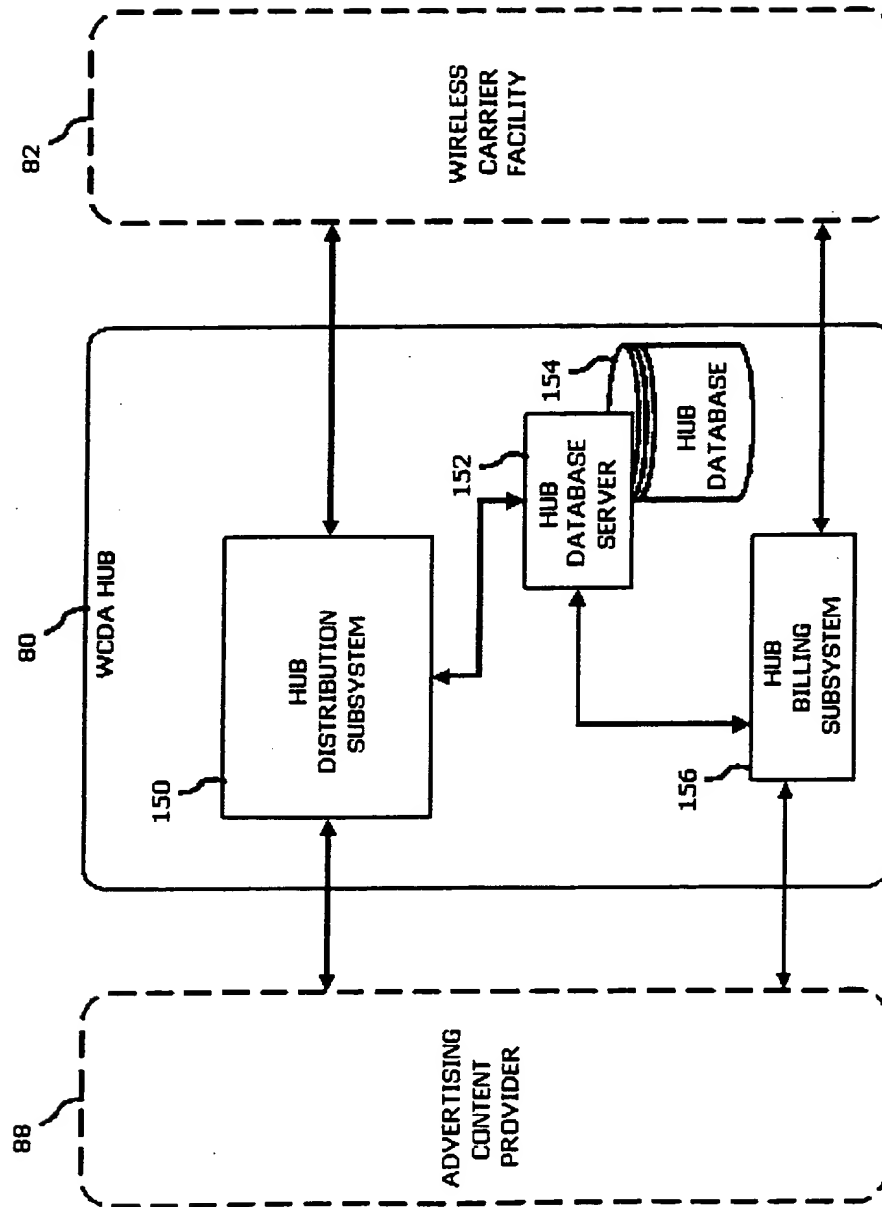


FIG. 5

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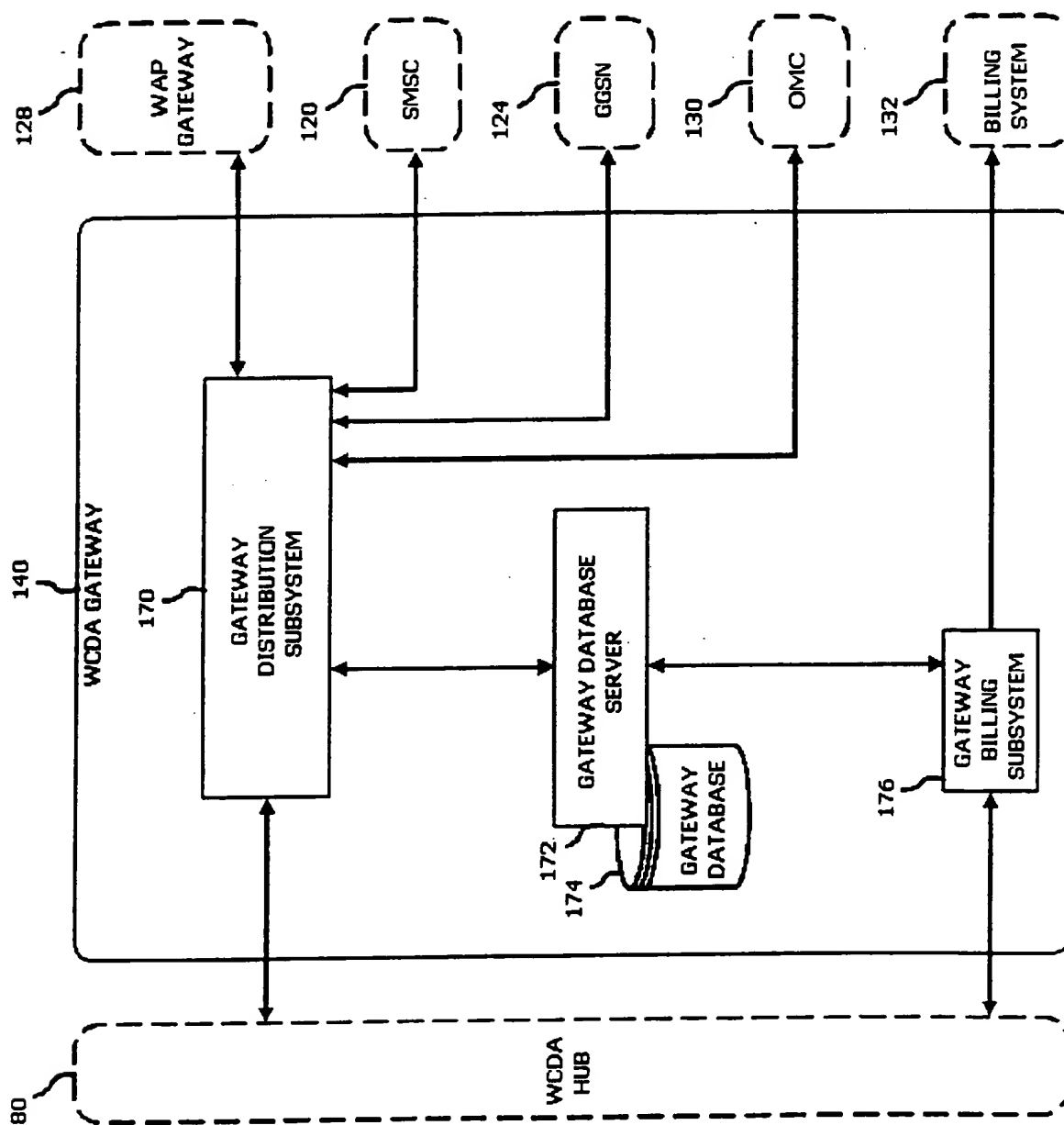
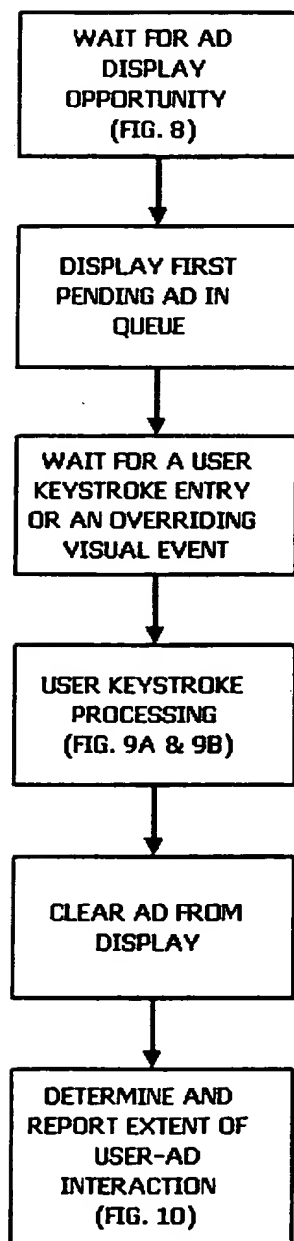


FIG. 6

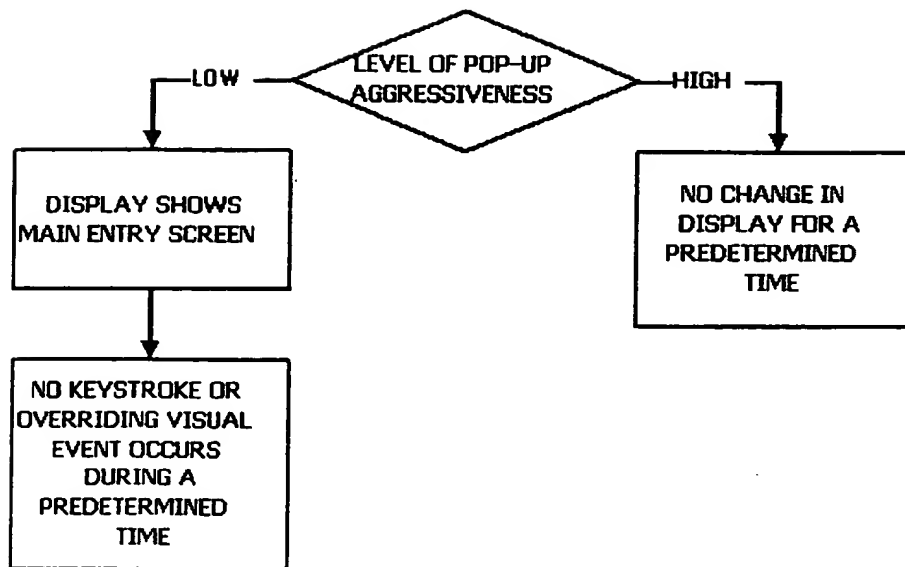
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FIG. 7



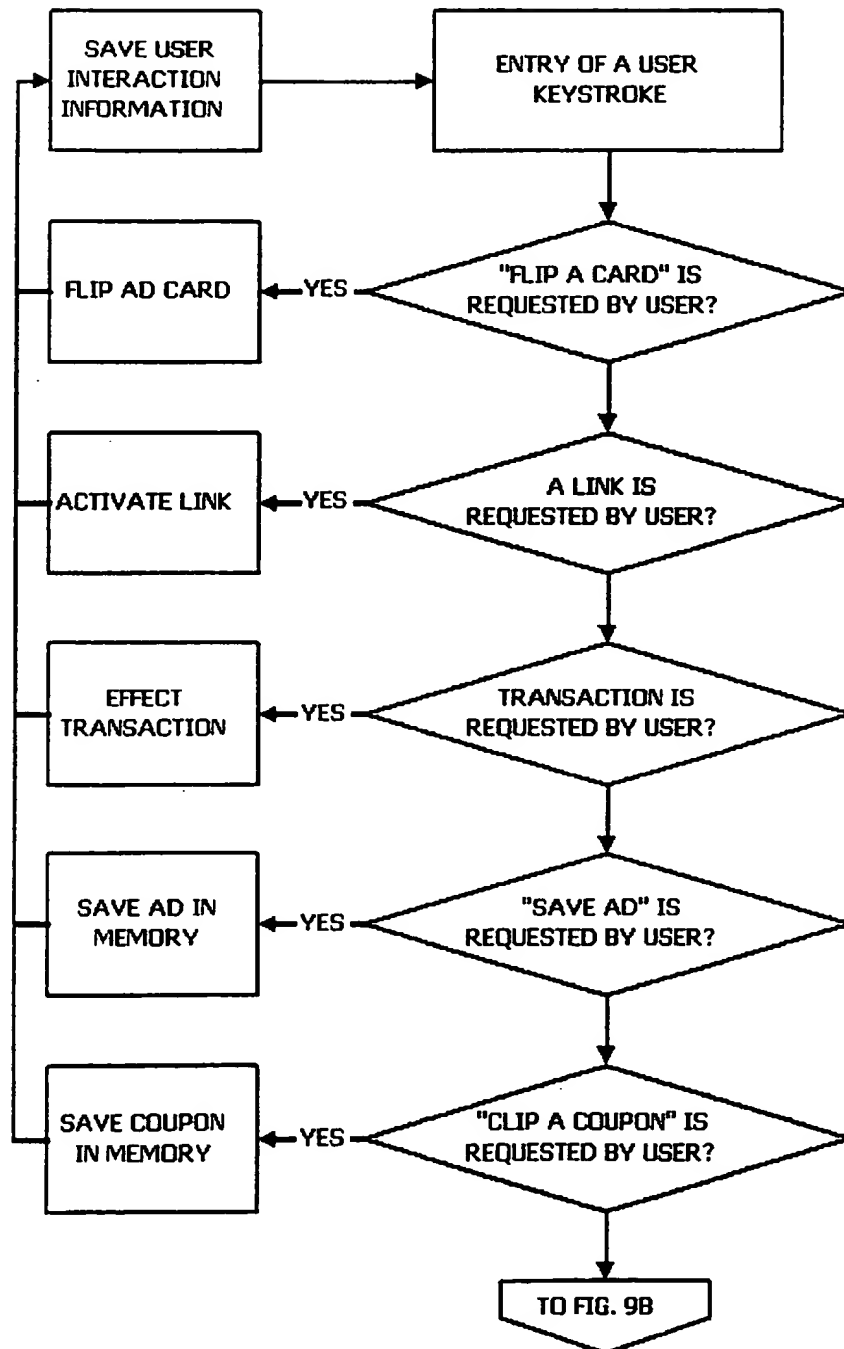
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FIG. 8



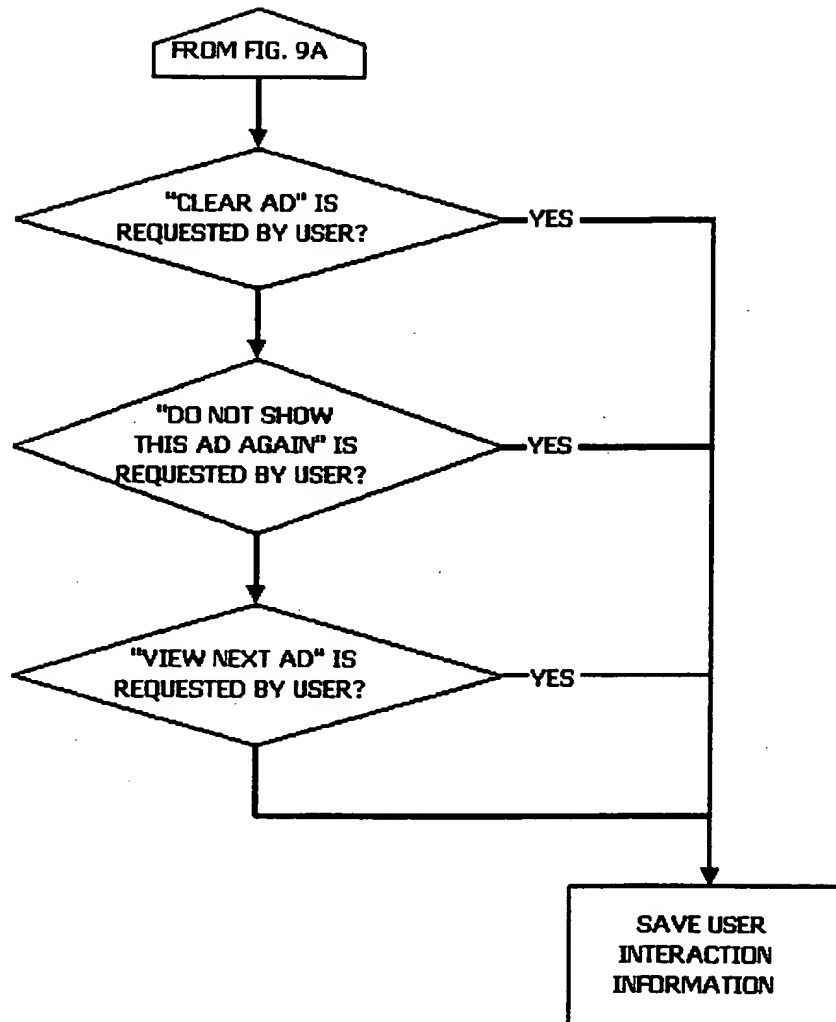
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FIG. 9A



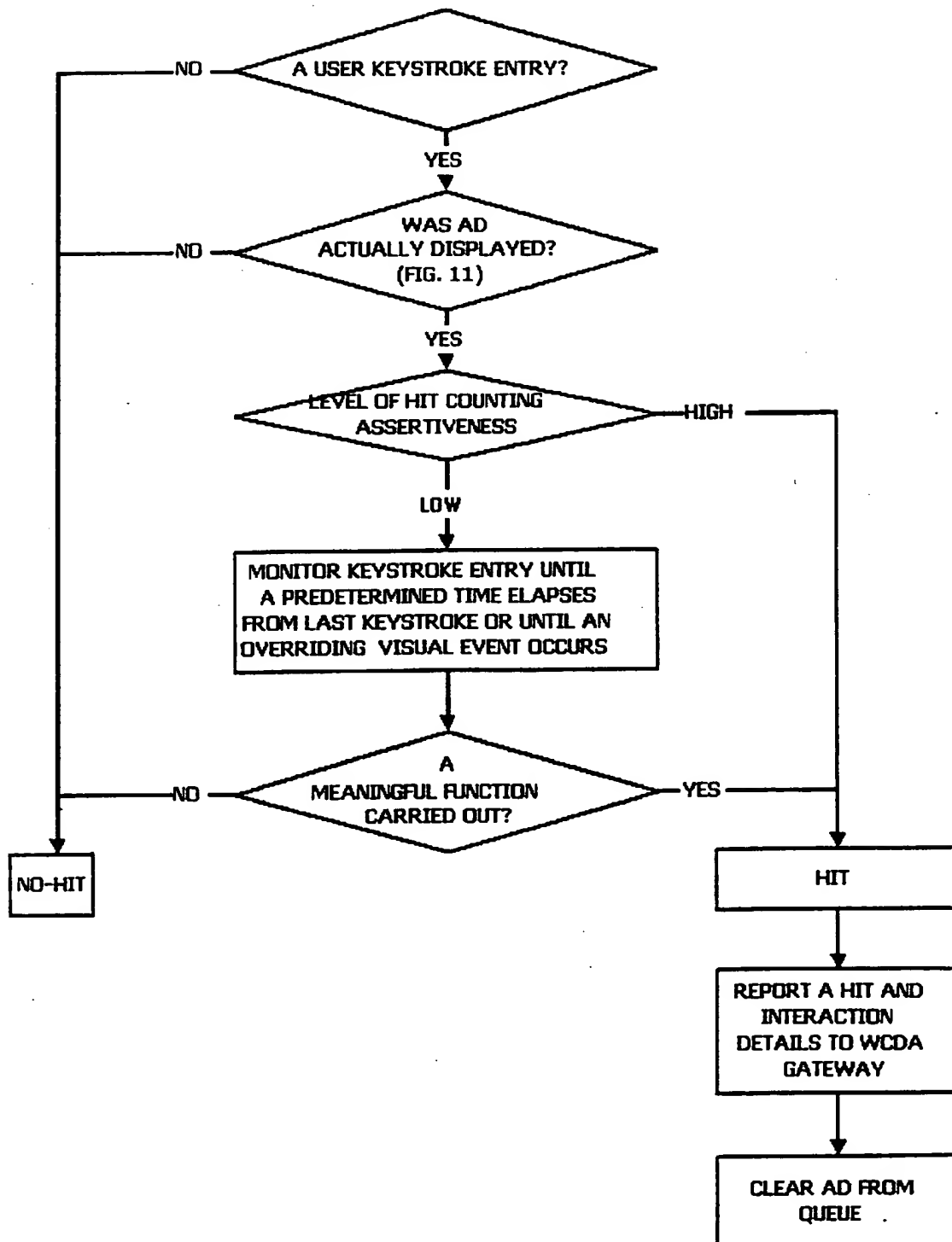
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FIG. 9B



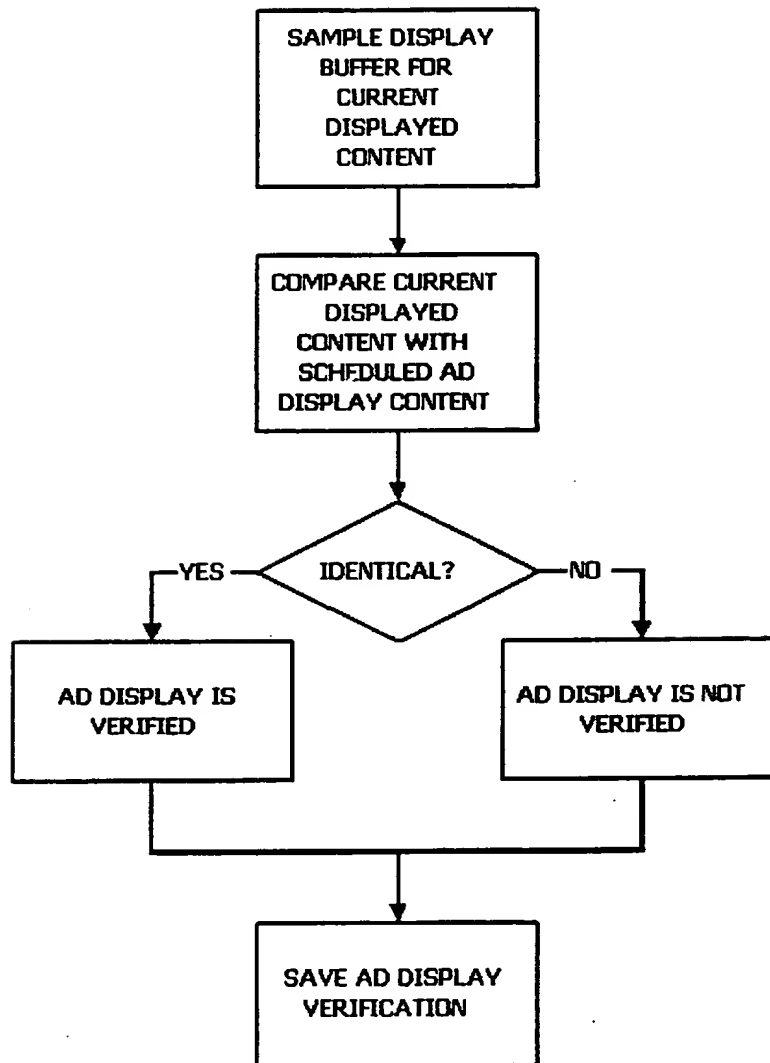
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FIG. 10



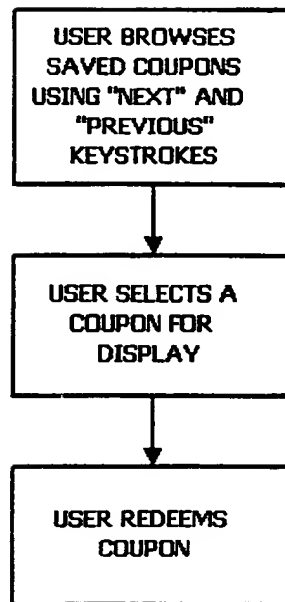
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FIG. 11



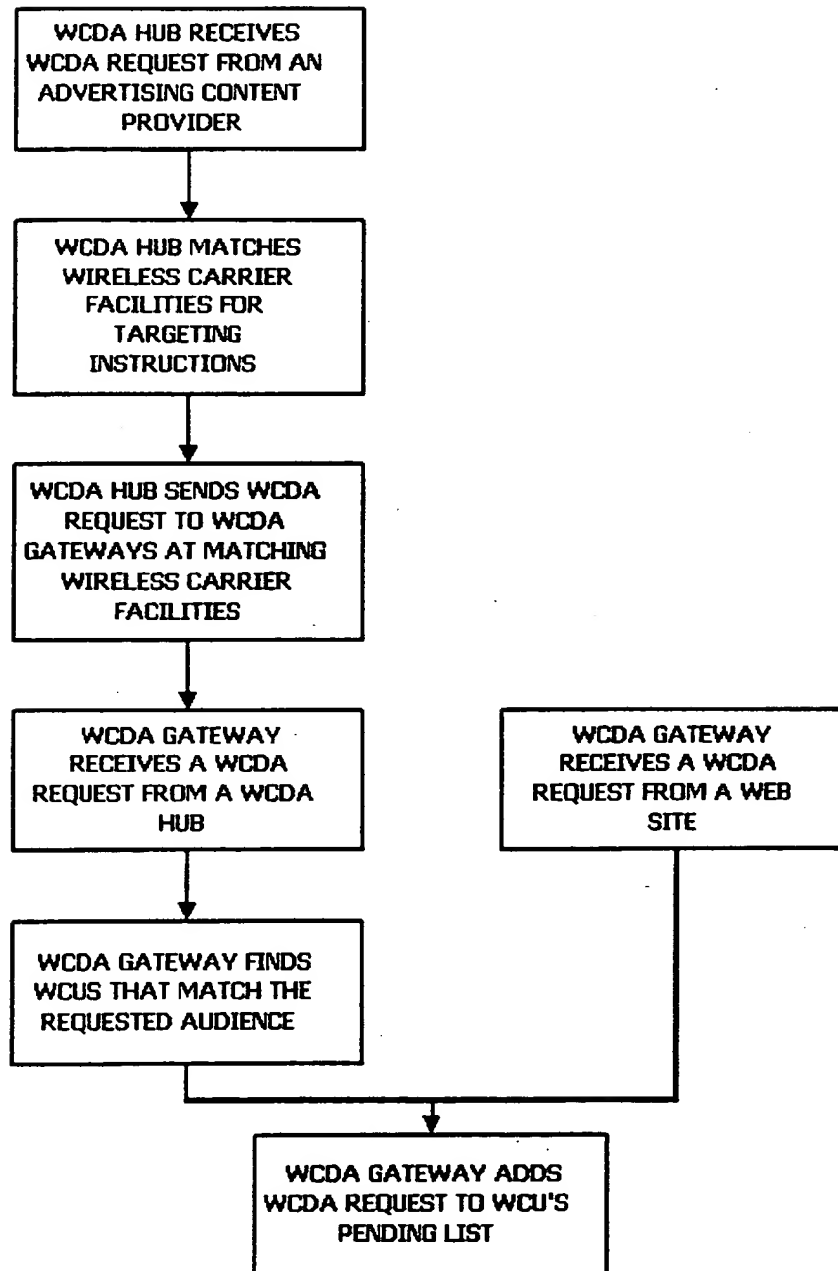
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FIG. 12



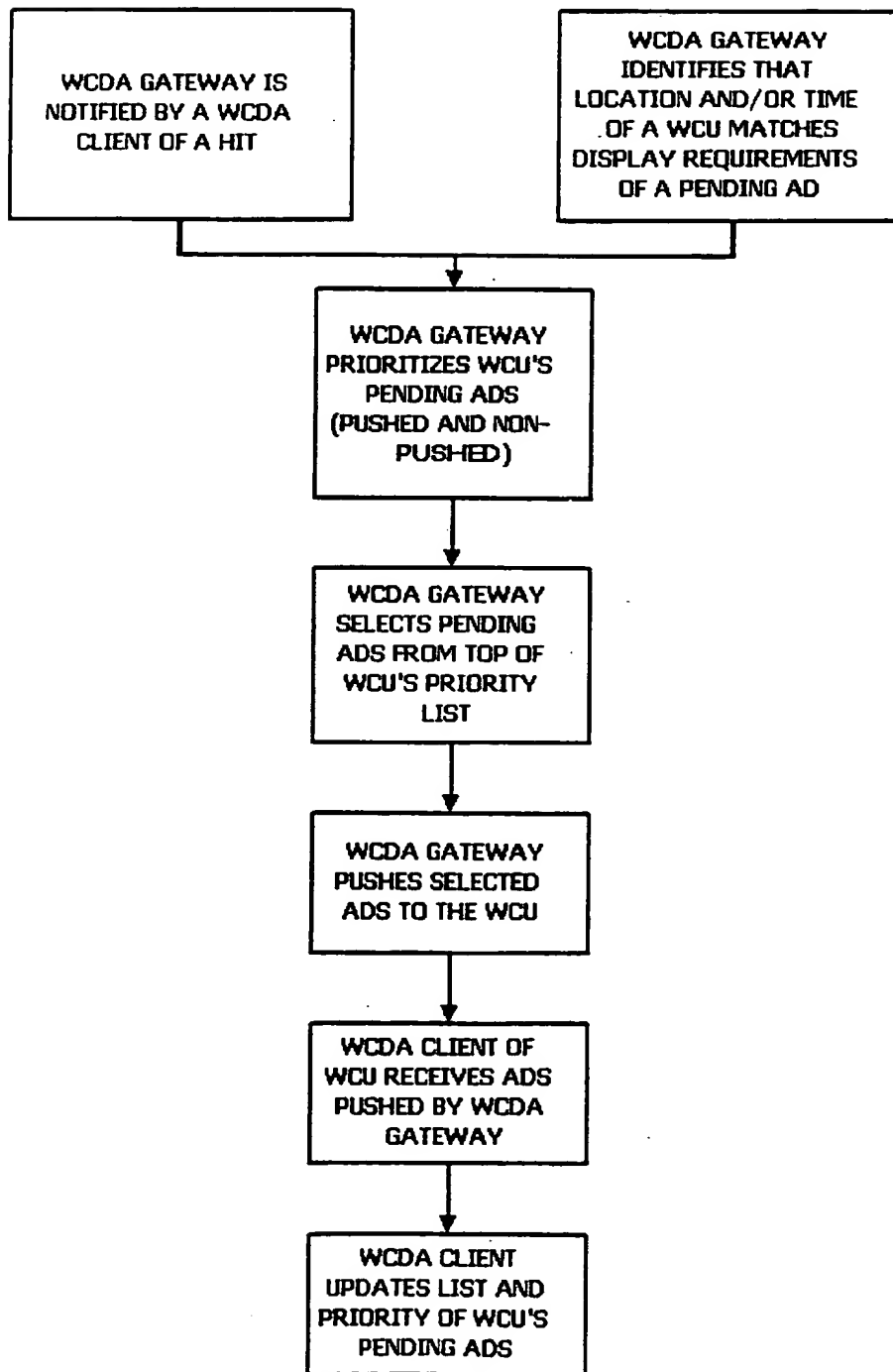
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FIG. 13



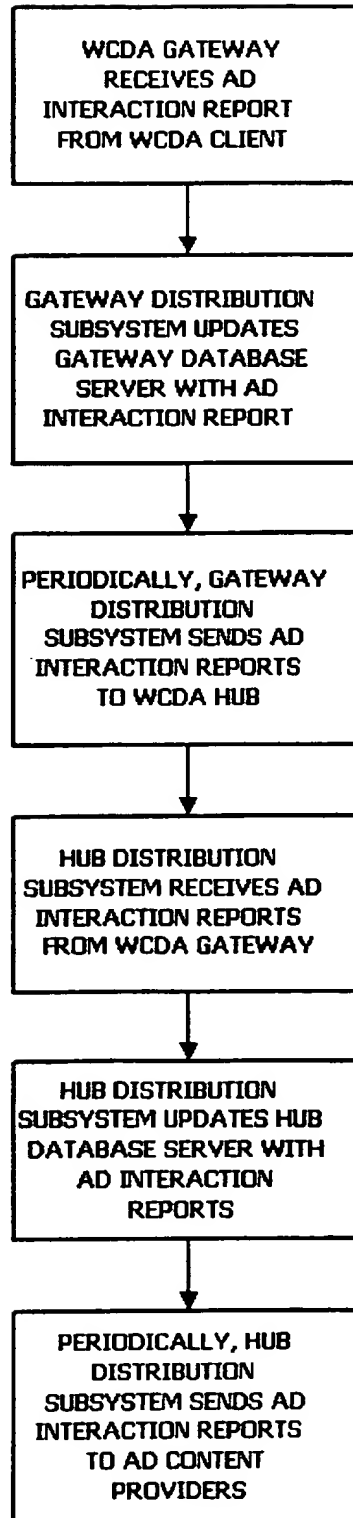
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FIG. 14



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FIG. 15



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FIG. 16

